Pre-Permitting Diurnal Bird Monitoring

California Energy Commission Staff Workshop

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For Discussion Purposes

Standard (Default) Pre-Permitting Methodology and Study Design

- Duration
- Frequency
- Intensity
- Metrics
- To be modified as new information becomes available

For Discussion Purposes

Standard Bird Use Count Duration

- One year of Bird Use Counts spanning all seasons
- Four Breeding Bird Surveys during appropriate time(s) of year
- One or more Raptor Nest Survey during appropriate time(s) of the year

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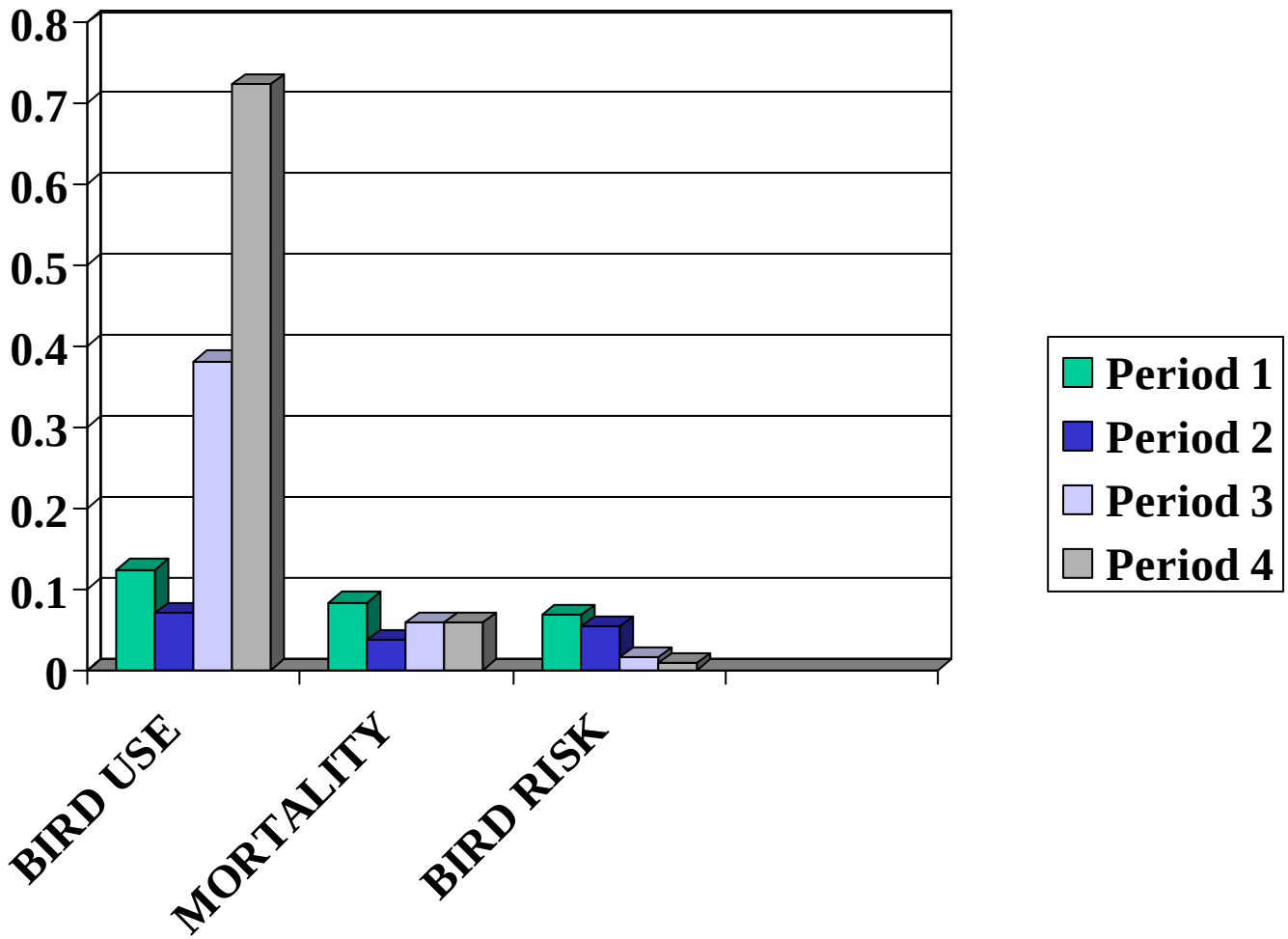


For Discussion Purposes

Standard Bird Use Count Frequency

- Conduct Bird Use Counts at a minimum of one hour per week at each observation point
- This can be increased for migration or nesting seasons or other special interest periods
- Vary time of counts throughout the day at each count site

For Discussion Purposes

Standard Bird Use Count Intensity

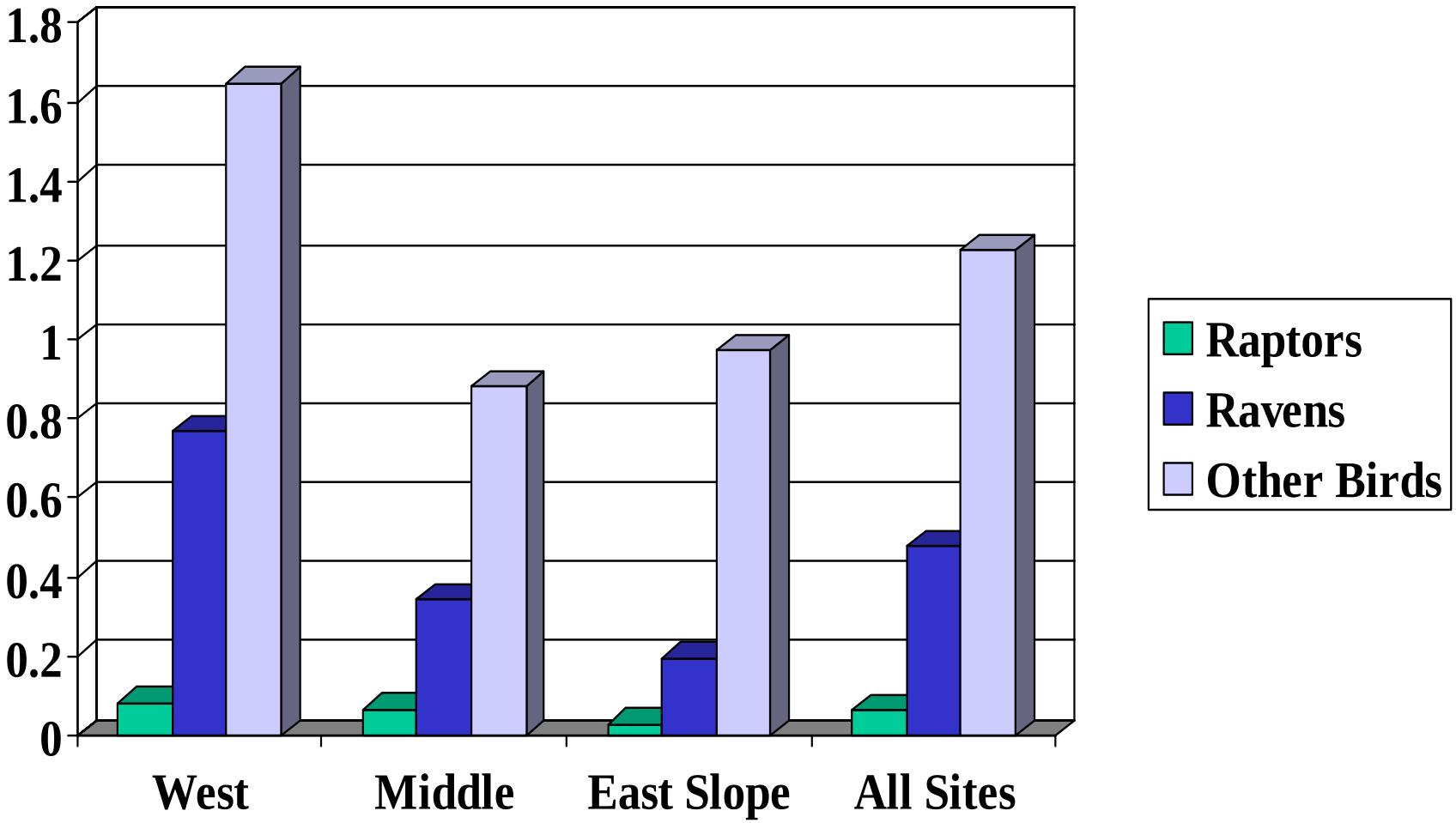
- Small developments (1-10 turbines) --one observation point per turbine up to ten
- Moderate sized developments (11-40 turbines) --10 observation points or 40% of turbine number whichever is greater
- Large development (41turbines and larger) --16 observation points or 30 % of turbine number whichever is greater

For Discussion Purposes

Standard Bird Use Count Intensity

- Cover whole area where turbines will be placed
- Breeding Bird count sites should be located every 200 meters in turbine location area
- Overlay a grid for observation point selection if turbines sites/locations are not known
- At least one raptor nest survey

TEHACHAPI BIRD USE



Bird Use Counts
Standard Method

Bird Use Count - Bird Use Counts are an index to relative abundance and bird use during a defined time and area. Point count type methods are used and count sites are normally chosen at turbine locations or nearby at good observation points. The observer documents bird behavior, distance to bird, height of bird off ground and length of time the bird is in the plot.

Standard Metrics

Bird Use - the number of birds detected utilizing a defined area during a defined time period (5-60 minutes).

One formula for Bird Use is:

$$\frac{\textbf{No. birds observed}}{\textbf{Time or Time and Area}} = \textbf{Bird Use}$$

- Raptors per minute
- Birds per minute in rotor swept risk area
- Birds per minute within 50 meters

Variation Between Bird Groups

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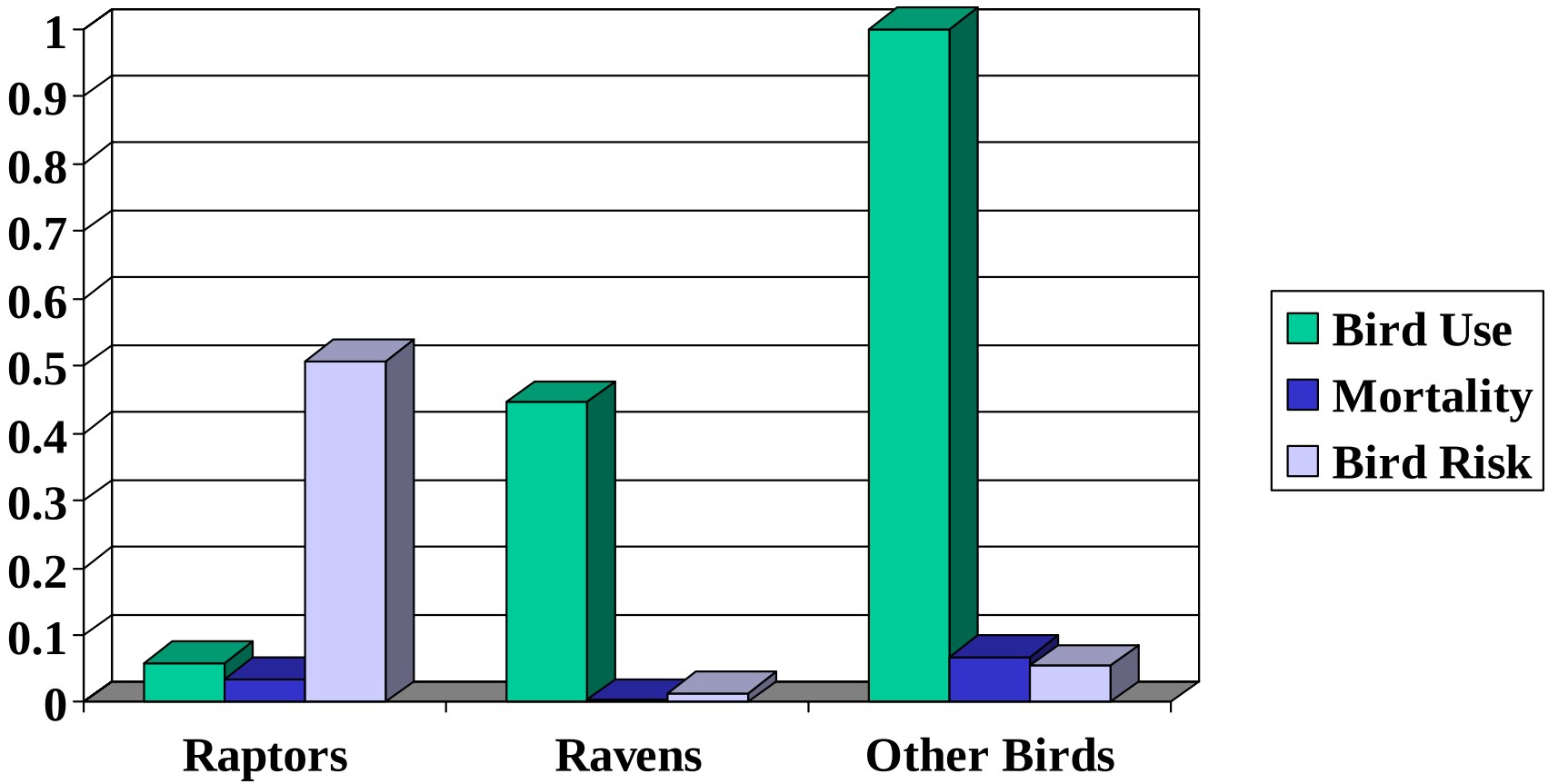
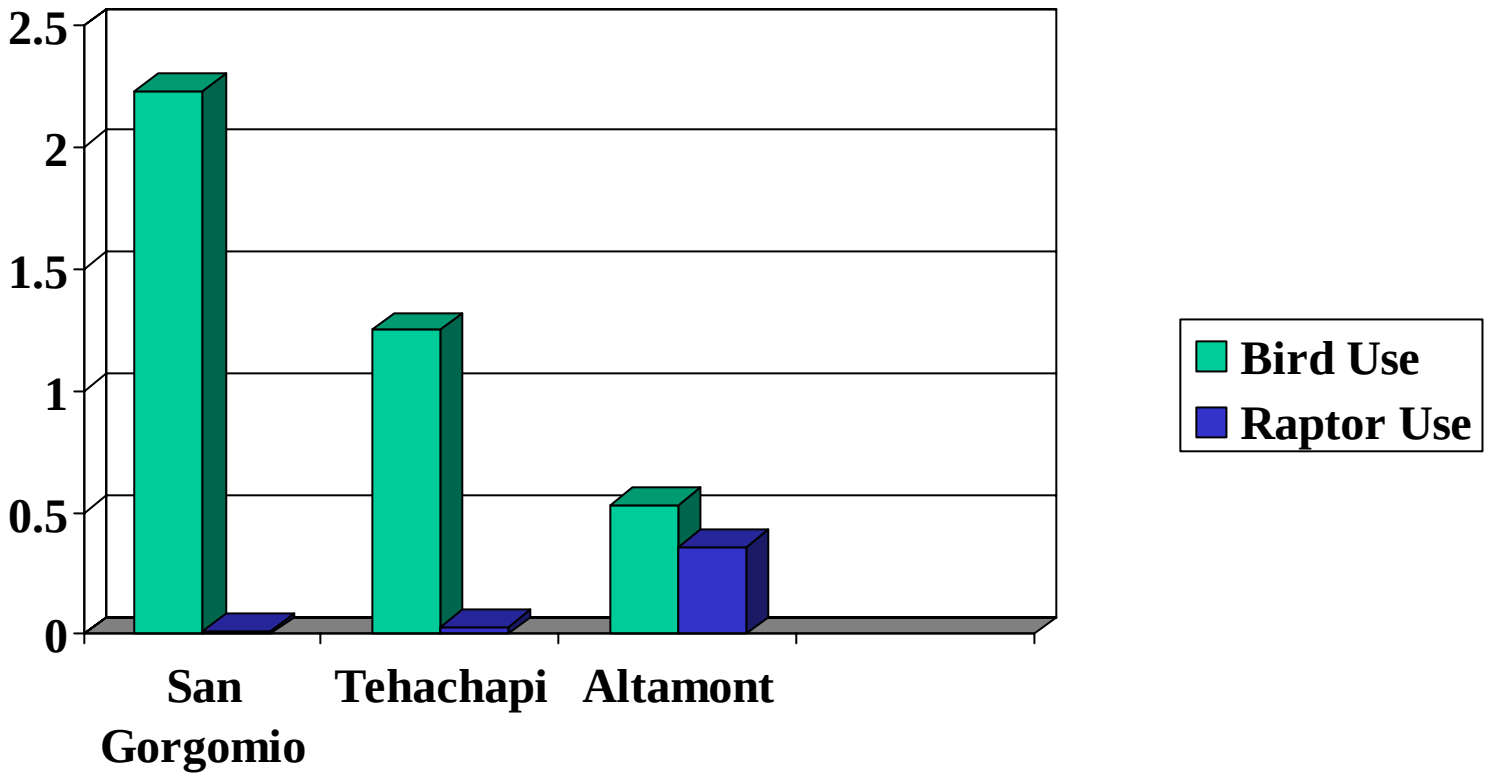
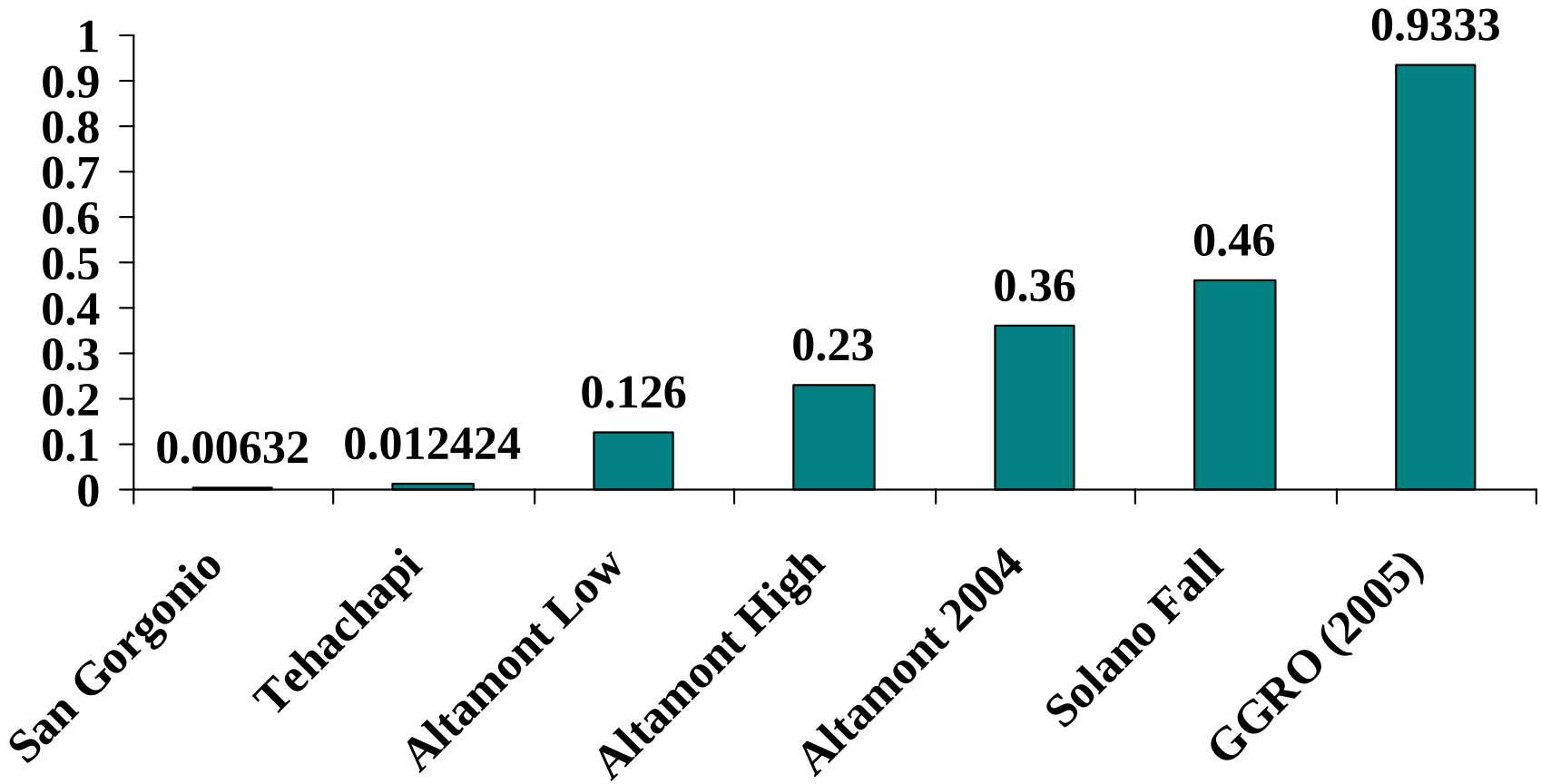


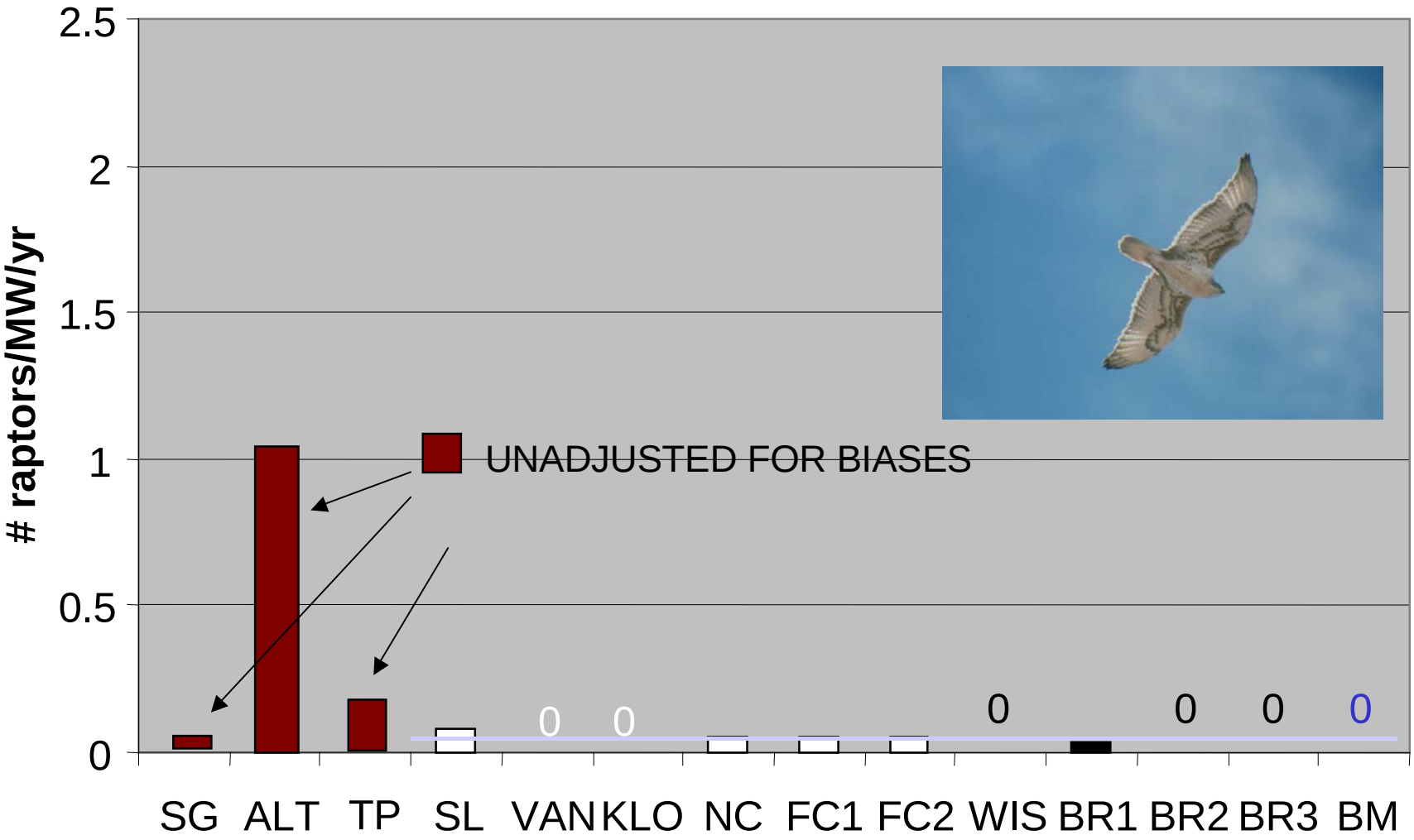
Comparison of Overall Bird and Raptor Use



Raptor Use Comparison Between California WRAs (Raptors/minute)



Raptor Fatalities/MW/YR



For Discussion Purposes
Less than Standard Studies

- Must be defensible
- Recent (five years or less) nearby credible and applicable studies available
- Infilling at well studied site with adequate information
- No sensitive bird species nor concern--adequate information

For Discussion Purposes
More Than Standard Studies

- Must be defensible
- Areas with high raptor use
- Moderate to large project at greenfield site with little knowledge of site bird resources
- First development in what will become a large WRA
- Special species and /or special situation (near wildlife refuge, daily flight corridor)

Special Case

Thinking Ahead

- Concern regarding natural fatality levels---conduct one year of Carcass Searches during pre-permitting. A BACI sample design is preferred.
- Concern regarding carcass search frequency needed for operations monitoring---conduct Carcass Removal studies during pre-permitting

Special Case Example

- Sensitive species or special situation concerns can lead to special pre-permitting studies---such as a feeding corridor for sandhill cranes or bald eagle use of an area or annual variation

Special Case Example

- Long-term information needed such as breeding density changes, population changes or displacement of use by a target species
- Tools such as mist netting, bird transects, point counts, or a combination of these may be needed for one or multiple years.

Objective Of Standardization

To develop metrics and methods which promote consistency and allow comparison between avian field studies relating to wind energy deployment.

Standardization

- Always do a standard study and develop standard metrics
- Additional studies can be conducted to supplement the standard studies---such as mist netting, using greater effort during migration time, and other methods and tools as defensible and needed
- Needed for better estimates of impacts
- Meta-analysis is needed to improve estimates

Benefits Of Standardization

- To promote the responsible permitting and development of windplants.
- To provide a reference to assess the suitability of a proposed windplant site and assess the effects of a windplant project on all bird resources.
- To provide sufficiently detailed and clearly understandable methods, measurements and definitions.
- To promote efficient, consistent, cost-effective methods which will produce comparable data.

In a Perfect World

- Thresholds/Limits Established (Speed Limits)
- Standard Methods and Metrics Adopted by all
- Thresholds/Limits Endorsed and Used by all (No Speeding)